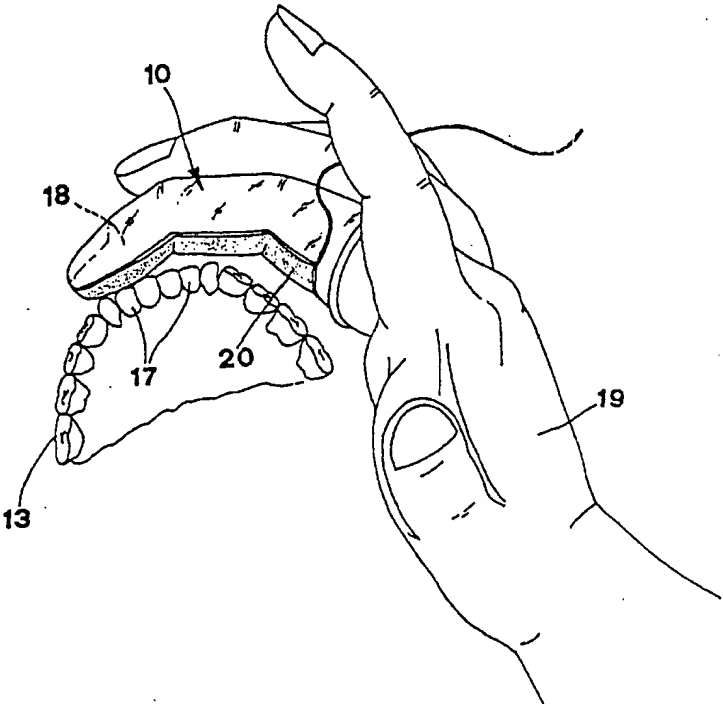




## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<p>(51) International Patent Classification <sup>6</sup> : A61C 15/00, A61H 13/00, A46B 5/04</p>	<p>A1</p>	<p>(11) International Publication Number: <b>WO 95/31154</b>  (43) International Publication Date: 23 November 1995 (23.11.95)</p>
<p>(21) International Application Number: PCT/IT94/00085  (22) International Filing Date: 14 June 1994 (14.06.94)  (30) Priority Data: MI94A000933 11 May 1994 (11.05.94) IT  (71)(72) Applicant and Inventor: MITTIGA MARIA IDA [IT/IT]; Via Bartolomeo Intieri, 3, I-00191 Roma (IT).  (74) Agent: DI GIOVANNI, Italo; Società Brevetti Dott. Ing. DiGiovanni, Schmiedt S.r.l., Via Aldrovandi, 7, I-20129 Milano (IT).</p>	<p>(81) Designated States: AT, AU, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, ES, FI, GB, HU, JP, KE, KP, KR, KZ, LK, LU, LV, MG, MN, MW, NL, NO, NZ, PL, PT, RO, RU, SD, SE, SI, SK, TT, UA, US, UZ, VN, European patent (AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).  Published With international search report.</p>	
<p>(54) Title: FINGER GLOVE COMPRISING AREAS PREPARED FOR ORAL HYGIENE</p> <p>(57) Abstract</p> <p>Glove (10) of fine natural or synthetic rubber for one finger (18) of the hand (19) having one or more operational areas (20) prepared on the surface in a longitudinal direction to correspond especially with the position of the finger tip, to enable the teeth (17), gums and other parts of the oral cavity to be rubbed and massaged also with the aid of various products for cleaning the teeth such as dentifrice or others, for health-giving treatment, massage and beneficial action generally.</p> 		

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Finger glove comprising areas prepared for oral hygiene

The invention concerns appliances and means generally for keeping the teeth clean.

Oral hygiene for prevention of disorders of the teeth  
5 and surrounding gum tissue, disorders which may even become serious and incurable, is known to be of great importance for general health.

Lack of oral hygiene leads to the spread of harmful germs, among the various species of microbes present in the mouth, producing film and causing diseases, especially  
10 tooth decay mainly due to the presence of streptococcus mutans. The film that forms on the teeth reappears five hours after removal and can turn into brown tartar caused by calcification of the bacteria and other substances it contains  
15 which in turn further assist accumulation of film leading to irritation and shrinkage of the gums.

Food, especially when too soft, leaves residual matter between the teeth where germs find a suitable breeding ground. Residual sugar creates an acid damaging for tooth enamel.

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To prevent mouth diseases proper oral hygiene is therefore a necessity and is at present attempted by means of a toothbrush on a handle which ought to be used for at least three minutes after each meal.

5 In this case however the fingers act on the teeth through two agencies: the handle of the toothbrush and the bristles. These agencies clearly impede any real perception during cleaning as reactions by the teeth cannot be felt by the fingers.

10 As it is difficult if not impossible to see inside the mouth during toothcleaning, present methods of oral hygiene must necessarily be rough and ready and prevent any possibility of a proper check on the results.

By their very nature, bristles are a hotbed of bacteria and  
15 of germs that collect among the teeth.

Rinsing the toothbrush under a running tap after use is almost entirely ineffective as the water cannot penetrate between the tufts of bristles and even less among the bristles themselves.

20 Action by toothbrushes may even be negative if used by the members of a family and exchanged indiscriminately among them.

The idea of a disposable toothbrush to be discarded after use is unthinkable, the structure of an efficient one being complex and therefore too costly.  
25

Purpose of the above invention is to improve cleaning of the teeth and reduce proliferation of bacteria while using an inexpensive means as will be explained below.

Subject of the invention is a process for more efficient  
30 oral hygiene using an appliance consisting of a very fine natural or synthetic rubber glove for one finger of the

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hand whose surface comprises one or more specially prepared operational areas extending longitudinally to the tip and particularly including the finger tip.

As said area is situated on the inside of the finger, this  
5 appliance can rub it against the teeth, gums and elsewhere in the oral cavity, assisted by dentifrice and other products for cleaning the teeth, tonifying the gums, massaging and applying beneficial action generally.

One product could with advantage contain fluorine to keep  
10 the teeth in good condition, and could also remove film. The products could be applied dry or in liquid form, with or without water.

The operational area can be shaped like a longitudinal strip while others may be variously shaped, polygonal or discoid.  
15 Said areas may be of thick absorbent paper, rubber, synthetic material or spongy and may have longitudinal, transversal, diagonal crisscrossing, helical, curved, spot-like or spherical prominences.

Said areas may be impregnated, as the case requires, with  
20 dentifrice, detergents or beneficial lotions generally.

Said areas may carry perpendicular filaments similar to the bristles of an ordinary toothbrush, or may have small plates containing holes from which tufts of natural or synthetic bristles emerge.

25 In one execution the operational areas are sealed cells containing an active product, the cell walls on the outside surface of the finger glove being very thin or so made as to break open during massage of the teeth and gums.

Said areas may be the same or be different, associated or  
30 single, laid side by side or otherwise placed.

The active product is dentifrice, detergent or some beneficial substance; it may be fluid, in powder form or else

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soluble in water.

In one execution the operational area is a flat sealed chamber containing a fluid product whose walls, on the outer surface of the finger glove, contain minute perforations or pores.

When the teeth or gums are rubbed with it, the fluid product therefore seeps out through said holes or pores, the fluid product concerned being a dentifrice, detergent or of a medicinally beneficial kind.

- 10 The finger glove is preferably supplied packed inside a sealed waterproof sachet.

The sachet contains a detergent, health-giving, refreshing product beneficial generally for the oral cavity.

Both the finger glove and inside of the sachet are sterile.

- 15 A thread of dental floss may be attached to the glove.

At the closed rounded end of the finger glove there may be a soft pointed cone-shaped projection specially useful for cleaning the teeth.

Said projection may be axial, directed laterally or dia-

- 20 gonally as preferred.

The invented finger glove may be made in different sizes to fit the finger of the hand of a man, woman or child and, at the open end, there is a thickened border to assist in putting it on and taking it off.

- 25 The invention clearly offers many advantages.

Cleaning teeth is done with a sensitive means, with real perception of the part under the finger tip, of pressure applied and of the effects obtained since it is the finger itself which is in practically direct contact with the

- 30 teeth with all the tactile characteristics it possesses.

The same is true of all action on teeth, gums and other parts of the oral cavity during application of beneficial

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or relief-giving products such as pain killers and others. Maximum hygiene is assured since the appliance can be disposed of after use on account of its very low cost.

The advantages of the invention may be summed up as permitting highly effective, safe and sensitive care of the oral cavity both in cleaning the teeth and in application of medicinal substances.

Characteristics and purposes of the invention will be made still clearer by the following examples of its execution illustrated by diagrammatically drawn figures.

Fig. 1 Front view of the invented finger glove on which is an active strip of roughened absorbent paper, protected by a sealed waterproof packet.

Fig. 2 Perspective view of the glove outside the packet.

Fig. 3 Perspective view of the glove worn on the middle finger of a user while cleaning the teeth.

Fig. 4 Perspective view of the glove whose active strip is coated with filaments of synthetic material.

Fig. 5 Perspective view of the glove with a rubber active strip on which are protuberances.

Fig. 6 Perspective view of the glove whose active strip is covered with longitudinal ribbing.

Fig. 7 Perspective view of the glove whose active strip is covered with transversal ribbing.

Fig. 8 Perspective view of the glove with an active strip of synthetic material carrying tufts of hair.

Fig. 9 Perspective view of the glove on which are closed cells filled with an active fluid.

Fig. 10 Perspective view of the glove on which is a flat oblong chamber filled with active fluid and having minute perforations on the external surface.

Fig. 11 Perspective view of the glove with a circular active area.

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Fig. 12 Perspective view of the glove with two active strips of a different type, one alongside the other.

Figs. 13-15 Perspective view of the glove with soft tapering tips respectively in an axial, lateral and oblique direction.

5 The glove 10 of a substantially cylindrical shape for the finger of a hand is made of fine flexible rubber and has a rounded tip 11 and a thickened edge 12 at the open end. Fixed onto said glove is an active longitudinal strip 20  
10 of thick absorbent paper with a roughened surface extending from the tip to a short distance from the base. Its width is substantially half the glove's circumference. The size of the glove is substantially that of the middle finger of an adult person.

15 Said glove is protected by a packet 15 of waterproof material sealed all round its edges 16. The absorbent strip is impregnated with a detergent product for the teeth.

To use the glove, one end 16' is torn off the packet, the  
20 glove is taken out and fitted onto the middle finger 18 of the hand 19 so that the active strip 20 lies on the inner side of the finger 18.

To clean the arch 13 of the teeth 17 it is sufficient to rub them with the active strip 20 of the glove 10 which  
25 being impregnated with dentifrice and being roughened will produce an action much more effective than will an ordinary toothbrush.

This greater effectiveness is assured by use of the finger to reach all parts of the mouth and of the teeth 17 with  
30 maximum sensitivity and therefore with an action that is both thorough and gentle.



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The dentifrice with which the strip of paper is impregnated exerts its action as a detergent.

In Fig. 4 the finger glove 30 carries a strip 31 in which are implanted filaments 32 which practically speaking act  
5 like the bristles of an ordinary toothbrush.

The finger glove 40 carries a strip 41 of rubber on which are protuberances 42 joined to it.

On the finger gloves 50,60 there are strips 51,61 which respectively carry ribs placed longitudinally 52 and trans-  
10 versally 62.

On the finger glove 70 is a raised rubber strip 71 containing holes 72 in which tufts of bristles, 73, are fitted. This finger glove works substantially like a toothbrush. It will be clear that when all these finger gloves 50,60,  
15 70, are spread with dentifrice or with some other useful product and water, they will enable the teeth to be efficiently and thoroughly cleaned.

The cylindrical surface of the finger glove 80 carries a series of closed cells 81 containing an active fluid 82  
20 for the teeth. When the glove is rubbed against the teeth, the cells break open and spread the fluid all over the teeth or on the gums as well, and therefore do the work of an ordinary toothbrush or other means for treating the oral cavity.

25 On the finger glove 90 is a closed oblong chamber 91 full of fluid 92. Its surface 93 is perforated with minute holes 94. Therefore, unless pressure is exerted on the chamber the fluid remains inside it. But when the chamber is rubbed against the teeth, internal pressure causes the  
30 fluid to seep out through the holes onto the teeth or onto other parts of the mouth.

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In Fig. 11 the finger glove 100 has, instead of the active rectangular strips, active circular raised areas 101 placed substantially like one or other of the gloves already described except that the shape is different.

- 5 The circular shape can of course be replaced by others that may be oval, polygonal generally but whose effect is similar to the others.

The finger glove 105 has two rectangular longitudinal operational strips placed side by side, one 106 having protuberances 107 and the other 108 being of thick absorbent  
10 paper with a rough surface. Cleaning of the oral cavity can therefore be done using the properties of either strip as preferred.

Associations among all the operational areas already described or of other types are obviously possible.  
15

Figures 13-15 show finger gloves 110, 112, 114 provided with soft tapering projections 111, 113, 115, respectively placed axially, laterally or obliquely, for the well known action of this kind of device in the oral cavity.

- 20 These projections can be added to all the finger gloves already described.

The finger glove 10 also has a thread of dental floss 29 attached to it, this being highly useful for removing film between the teeth.

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Claims

1. Appliance for hygiene and care of the oral cavity,  
characterized in that it consists of a finger glove (10,  
30,40,60;70,80,90,100,110,112,114) of very fine natural  
5 or synthetic rubber, for one finger (18) of the hand (19)  
on which there are one or more operational surface areas  
(20,31,41,61,71,81,91,101) placed longitudinally and ex-  
tending as far as the closed end (11) and therefore par-  
ticularly at the position of the finger tip so that, by  
10 wearing the glove with said area inside the finger (18)  
the teeth (17), gums and other parts of the oral cavity  
can be contacted and rubbed with the aid of various pro-  
ducts for cleaning the teeth, such as dentifrice or others,  
for treatment, massage and beneficial action generally.
- 15 2. Appliance as in claim 1,  
characterized in that some products contain fluorine.
3. Appliance as in claim 1,  
characterized in that the operational areas (20,31,41,51,  
61,71,81,91,101) are of the same or of a different type,  
20 are or are not associated together, are placed side by  
side or arranged differently.
4. Appliance as in claim 1,  
characterized in that the operational area (20,31,41,51,  
71,91) consists of a longitudinal strip.
- 25 5. Appliance (80,100) as in claim 1,  
characterized in that the operational area (81,101) is  
shaped as a polygon, discoid.
6. Appliance as in claim 1,  
characterized in that the operational area (20,31,41,61,  
30 71,81,91,101) is of thick absorbent paper, rubber, syn-  
thetic material, spongy, as the case may require.

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7. Appliance (50,60) as in claim 1,  
characterized in that the operational area (51,61) carries ribbing which, as the case requires, may lie longitudinally (52), transversally (62), diagonally, crosswise,  
5 helically, curving, spot-like, spherical (81), discoidal (101).

8. Appliance as in claim 1,  
characterized in that the operational area (20) is impregnated, as the case may require, with dentifrice, detergent or health-giving products, or others generally beneficial.

10 9. Appliance (30) as in claim 1,  
characterized in that the operational area (31) is covered with orthogonal filaments (32) similar to the bristles on ordinary toothbrushes.

10. Appliance (70) as in claim 1,  
15 characterized in that the operational area consists of small plates (71) containing holes (72) into which are fitted tufts (73) of natural or synthetic bristles.

11. Appliance (80) as in claim 1,  
characterized in that the operational area is formed of  
20 sealed cells (81) containing an active product (82) whose surface is on the outer surface of the glove, of a thickness and make such as to assist its breaking open when the area is rubbed on the teeth or on the gums, said active product (82) being dentifrice, detergent or health-giving  
25 generally, in fluid form or in powder soluble in water.

12. Appliance as in claim 1,  
characterized in that the operational area is a flat, sealed chamber (91) containing a fluid product (92) whose surface corresponds to the surface (93) of the glove and contains  
30 minute holes or pores (94) so that the fluid product (92)

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seeps out through said minute holes or pores (94) when pressure is applied due to rubbing on the teeth or on the gums, said fluid product being dentifrice, a detergent or some beneficial substance generally.

5 13. Appliance as in claim 1,  
characterized in that the finger glove (10,30,40,50,60,  
70,80,90,100, 110, 112, 114) is enclosed within a sealed  
waterproof packet (15).

14. Appliance as in claim 13,  
10 characterized in that the packet(15)contains inside it  
a detergent, healing, refreshing product generally bene-  
ficial for the oral cavity.

15 15. Appliance as in claim 13,  
characterized in that both the inside of the packet (15)  
and the finger glove (10,30,40,50,60,70,80,90,100, 110,  
112, 114) are sterile.

16. Appliance as in claim 1,  
characterized in that attached to the finger glove (10,  
30,40,50,60,70,80,90,100, 110,112, 114) is a thread (29)  
20 termed dental floss.

17. Appliance as in claim 1,  
characterized in that the finger glove (10,30,40,50,60,  
70,80,90,100) is made in various sizes to fit the finger  
of the hand of a man, woman or child user.

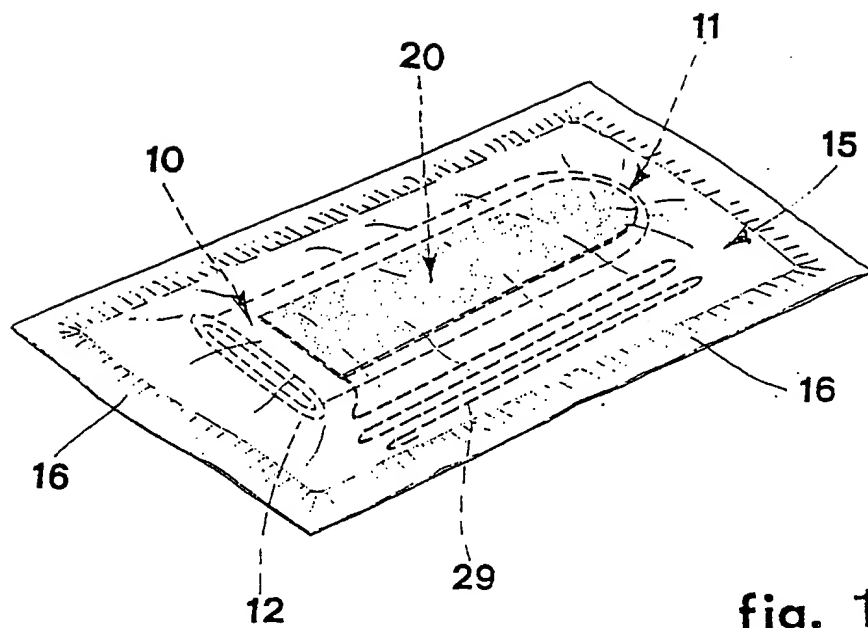
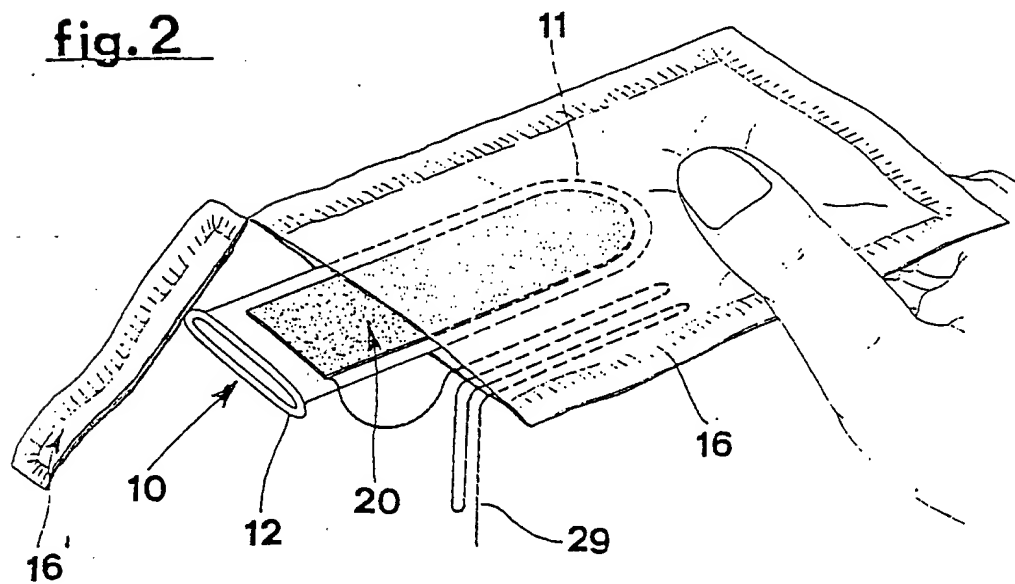
25 18. Appliance as in claim 1,  
characterized in that the finger glove (10,30,50,60,70,  
90,100,110,112,114) has at the open end a thicker edge  
(12) to assist putting it on the finger (18)and removing it.

19. Appliance as in claim 1,  
30 characterized in that the products are of the type known  
as anti-film.

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20. Appliance as in claim 1,  
characterized in that the products can even be applied  
dry to the parts of the oral cavity.
21. Appliance as in claim 1,  
5 characterized in that the products (82),92) are liquid  
with a partial content of water or without water.
22. Appliance (110,112,114) as in claim 1,  
characterized in that at the closed rounded end (11) is  
a soft pointed tapered projection (111,113,115) useful  
10 for action inside the oral cavity.
23. Appliance (110,112,114) as in claim 21;  
characterized in that the tapered projection (111,113,  
115, is, as the case may be, axial (111), lateral (113,  
oblique (115).
- 15 24. Process for hygiene and care of the oral cavity  
characterized in that action on the teeth (17) and on  
other parts of the oral cavity is carried out by surface  
operational areas (20,31,41,51,61,71,81,91,101) prepared  
as a longitudinal strip extending to the tip (11) of an  
20 appliance formed of a finger glove (10,30,40,50,60,70,80,  
90,100, 110,112,114) of fine natural or synthetic rubber  
for one finger (18) of the hand (19), which strip is placed  
on the inner side of the finger (18) to correspond espe-  
cially with the finger tip and is placed in contact with,  
25 and rubbed against, the teeth (17), the gums and other  
parts of the oral cavity so exerting, with the aid of  
dentifrice or other products a cleansing action on the  
teeth, health-giving treatments, massage and producing  
beneficial effects generally.

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fig. 1fig. 2

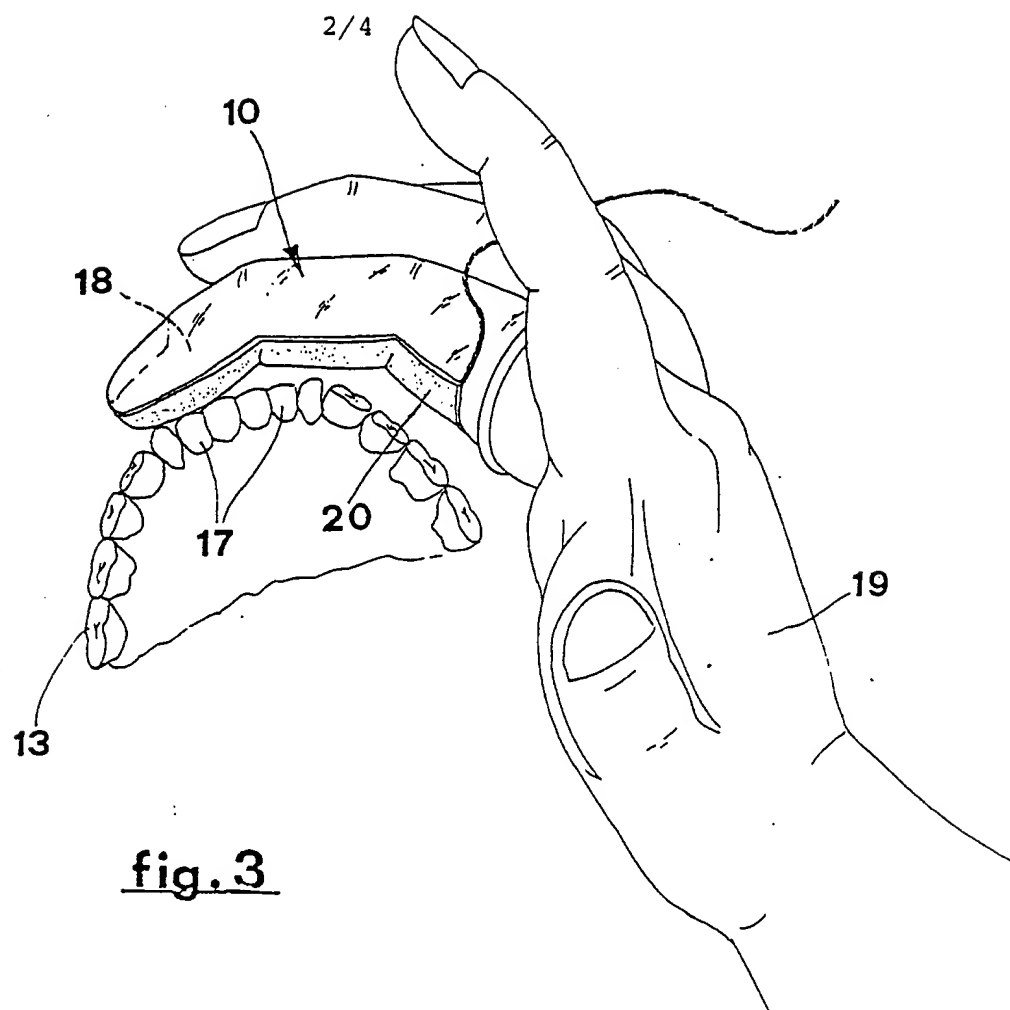


fig. 3

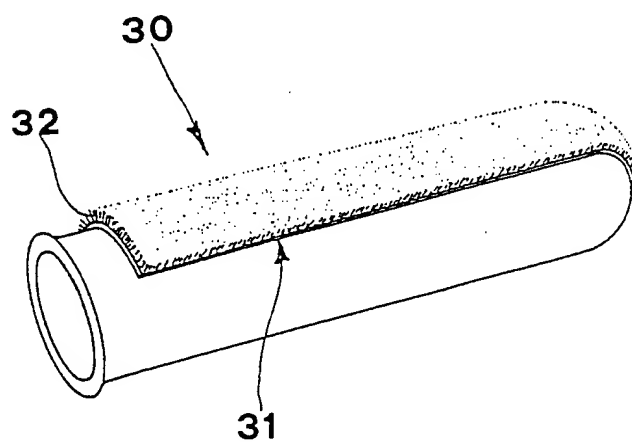


fig. 4



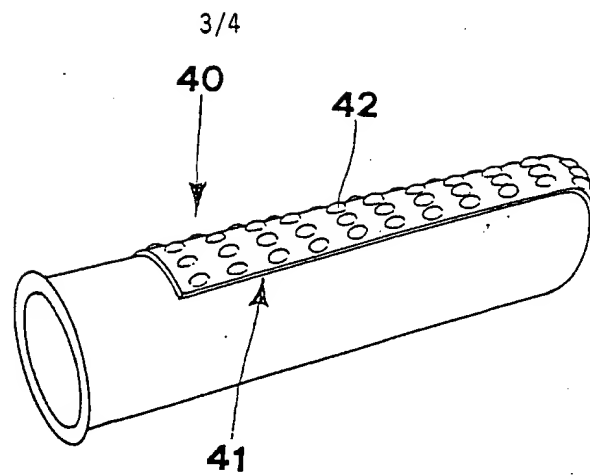


fig. 5

fig. 6

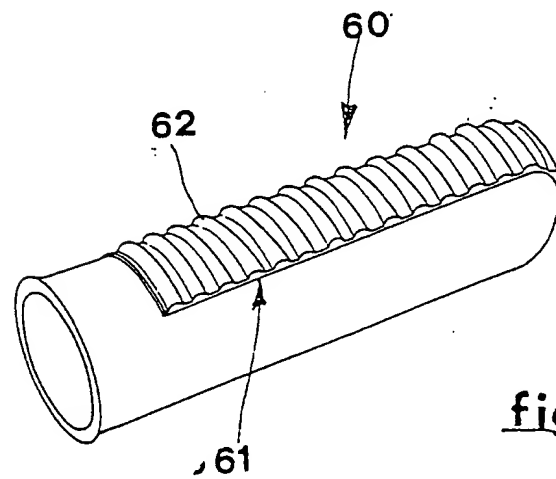
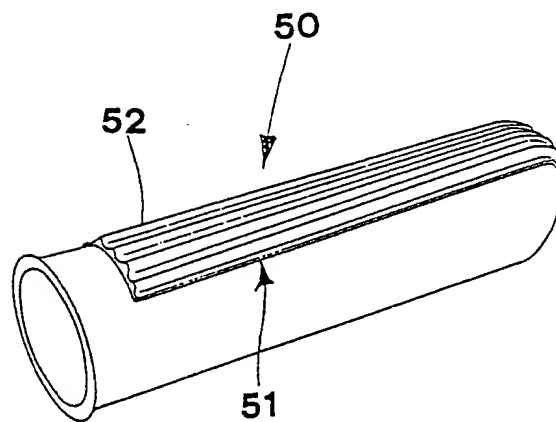


fig. 7

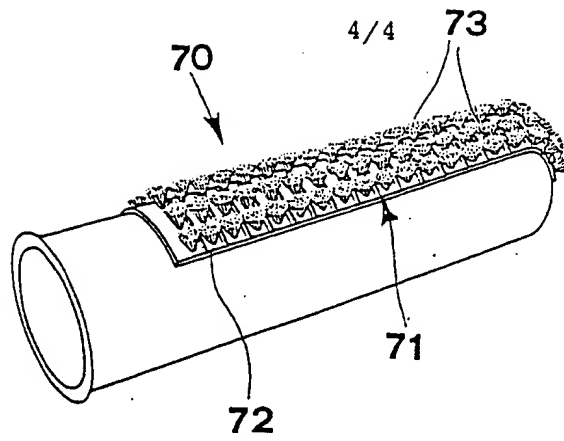


fig. 8

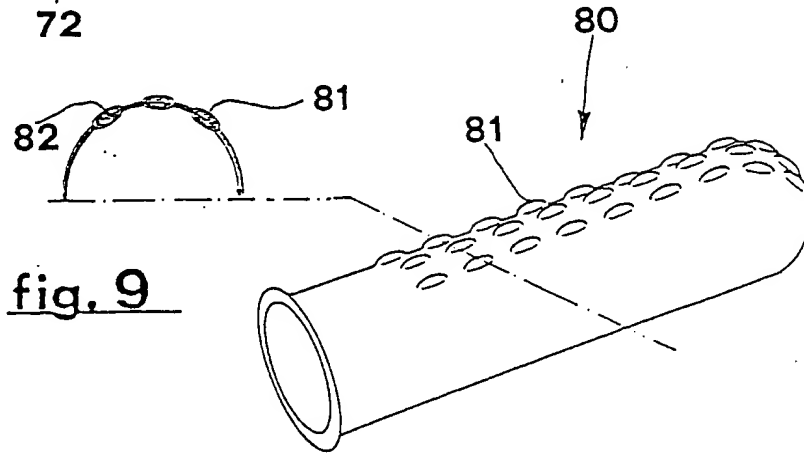


fig. 9

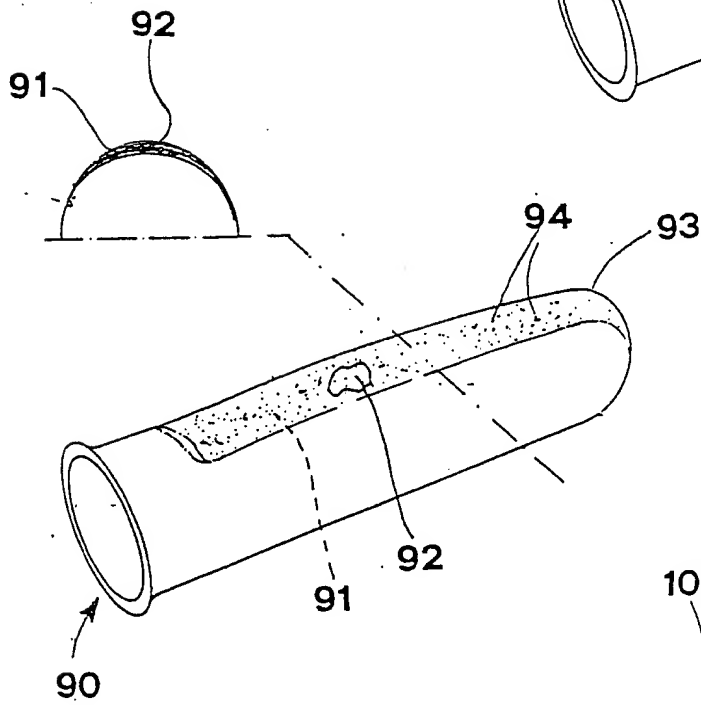
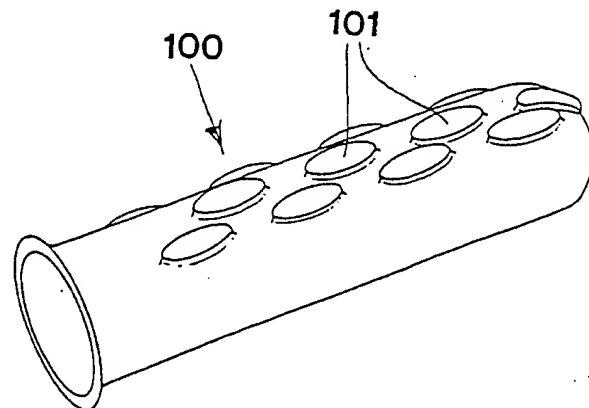


fig. 10

fig. 11



## INTERNATIONAL SEARCH REPORT

Int. l. Application No

PCT/IT 94/00085

## A. CLASSIFICATION OF SUBJECT MATTER

IPC 6 A61C15/00 A61H13/00 A46B5/04

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 A61C A61H A46B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DE,A,32 32 313 (FINKE) 1 March 1984	1-4,7-9, 11, 16-18, 20,21,24 6,13-15
Y	see the whole document ----	
Y	GB,A,2 266 243 (RICHARDSON) 27 October 1993 see the whole document ----	6,13-15
X	DE,A,42 07 864 (GROSS) 16 September 1993	1,9,17, 18,20 24
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PCT/IT 94/00085

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE-A-3232313	01-03-84	NONE	
GB-A-2266243	27-10-93	NONE	
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